National Institute of Technology Rourkela

Defence Seminar

Seminar Title	: Learning to Generate Color Names and Color Representation for Human-Computer Interactions
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Venue	: EC-Seminar Hall
Date and Time	: 25 Apr 2025 (11 AM)

Abstract : The work presented in the thesis is broadly in the domain computational color naming and color representations for Human-Computer Interaction with applications in computer vision, graphics and enhancing user interface for color search with linguistic color names. Rule-based and mapping based methods in the domain have limited color vocabulary, are computationally expensive and do not understand human color descriptions. This work presents few computational and Generative AI models that generate color names and color representation. The thesis discusses color naming at pixel-level for image editing and Image-level color caption generation that automates the process of manual color label task in fashion parsing and e-commerce recognition. Further, it presents various sequence generation models and Seq2seq generation models to generate human level color names with accuracy. These models also generate non-convex denotation (&lsquoyellowish&rsquo), adjective modifiers (&lsquolight green&rsquo) compositional descriptors (&lsquofaded red&rsquo). Application of these models are investigated for the vehicle color recognition problem utilized in intelligent transportation and other common color recognition tasks. The final chapter discusses deep learning architectures for generating color representation leveraging word embeddings. It understands the language semantics and contextual meaning of the color names and generates color representation in RGB color space. The thesis winds off with recommendation engines, which generate monochrome color palette for color selection and user experience enhancement.